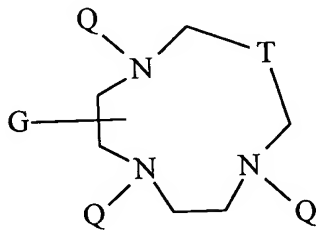
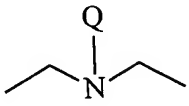
What is claimed is:

1. An Actinium-225 complex comprising a functionalized polyazamacrocyclic chelant compound of the formula I, hereinbelow:

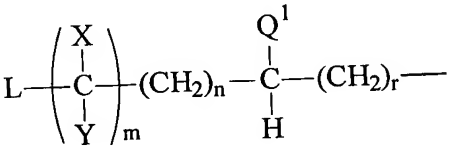


I

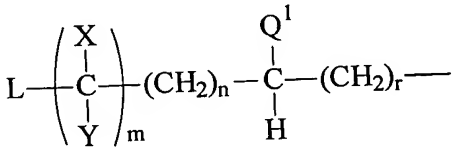
wherein:

T is  ;

G is independently hydrogen or

 ;

each Q is independently hydrogen, $(CHR^5)_pCO_2R$ or $(CHR^5)_pPO_3R^6R^7$ or

 ;

Q^1 is hydrogen, $(CHR^5)_wCO_2R$ or $(CHR^5)_wPO_3R^6R^7$;

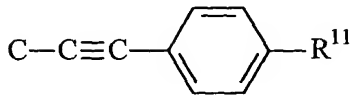
each R is independently hydrogen, benzyl or C_1-C_4 alkyl;

R^6 and R^7 are independently H, C_1-C_6 alkyl or (C_1-C_2 alkyl)phenyl;

each R^5 is independently hydrogen; C_1-C_4 alkyl or (C_1-C_2 alkyl)phenyl;

with the proviso that at least two of the sum of Q and Q^1 must be other than hydrogen;

A is CH, N, C-Br, C-Cl, C-SO_3H, C-OR^8, C-OR^9N^+-$R^{10}X^-$, or



;

Z and Z^1 independently are CH, N, C-SO_3H, N^+-$R^{10}X^-$, C-CH_2-OR^8 or C-C(O)-R^{11};

R^8 is H, C_1-C_5 alkyl, benzyl, or benzyl substituted with at least one R^{12};

R^9 is C_1-C_{16} alkylamino;

R^{10} is C_1-C_{16} alkyl, benzyl, or benzyl substituted with at least one R^{12};

R^{11} is -O-(C_1-C_3 alkyl), OH or NHR^{13};

R^{12} is H, NO_2, NH_2, isothiocyanato, semicarbazido, thiosemicarbazido, maleimido, bromoacetamido or carboxyl;

R^{13} is C_1-C_5 alkyl;

X and Y are each independently hydrogen or may be taken with an adjacent X and Y to form an additional carbon-carbon bond;

n is 0 or 1;

m is an integer from 0 to 10 inclusive;

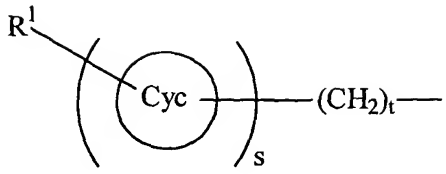
p is 1 or 2;

r is 0 or 1;

w is 0 or 1;

with the proviso that n is only 1 when X and/or Y form an additional carbon-carbon bond, and the sum of r and w is 0 or 1;

L is a linker/spacer group covalently bonded to, and replaces one hydrogen atom of one of the carbon atoms to which it is joined, said linker/spacer group being represented by the formula



wherein:

s is an integer of 0 or 1;

t is an integer of 0 to 20 inclusive;

R^1 is H or an electrophilic or nucleophilic moiety which allows for covalent attachment to a biological carrier, or synthetic linker which can be attached to a biological carrier, or precursor thereof; and

Cyc represents a cyclic aliphatic moiety, aromatic moiety, aliphatic heterocyclic moiety, or aromatic heterocyclic moiety, each of said moieties optionally substituted with one or more groups which do not interfere with binding to a biological carrier;

with the proviso that when R^1 is H, the linkage to the biological carrier is through one of Q or Q^1; and with the proviso that when R^1 is other than H, at least one of Q and Q^1 must be $(CHR^5)_pPO_3R^6R^7$; and with further proviso that when Q is $(CHR^5)_pCO_2R$, Q^1 is $(CHR^5)_wCO_2R$, R is H, R^5 is H, and R^1 is H, then the sum of m, n, p, r, s, t, and w is greater than 1;

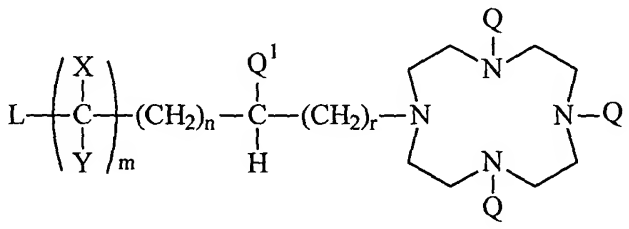
or pharmaceutically acceptable salt thereof; complexed with ^{225}Ac.

2. A conjugate comprising the complex of Claim 1 covalently attached to a biological carrier.

3. The conjugate according to Claim 2 wherein the biological carrier is a protein, antibody, antibody fragment, hormone, peptide, growth factor, antigen or hapten.

4. The complex of Claim 1 wherein R^1 is H, NO_2, NH_2, isothiocyanato, semicarbazido, thiosemicarbazido, maleimido, bromoacetamido or carboxyl.

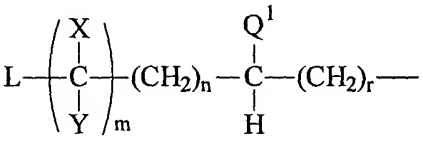
5. The complex according to Claim 1 wherein the functionalized chelant is a compound of formula II



II

wherein:

each Q is independently hydrogen, $(CHR^5)_pCO_2R$ or $(CHR^5)_pPO_3R^6R^7$ or



;

Q^1 is hydrogen, $(CHR^5)_wCO_2R$ or $(CHR^5)_wPO_3R^6R^7$;

each R is independently hydrogen, benzyl or C_1-C_4 alkyl;

R^6 and R^7 are independently H, C_1-C_6 alkyl or (C_1-C_2 alkyl)phenyl;

each R^5 is independently hydrogen; C_1-C_4 alkyl or (C_1-C_2 alkyl)phenyl;

with the proviso that at least two of the sum of Q and Q^1 must be other than hydrogen;

X and Y are each independently hydrogen or may be taken with an adjacent X and Y to form an additional carbon-carbon bond;

n is 0 or 1;

m is an integer from 0 to 10 inclusive;

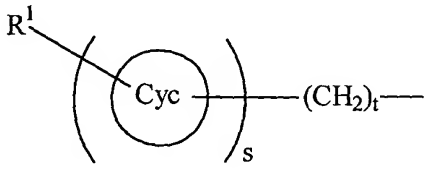
p is 1 or 2;

r is 0 or 1;

w is 0 or 1;

with the proviso that n is only 1 when X and/or Y form an additional carbon-carbon bond, and the sum of r and w is 0 or 1;

L is a linker/spacer group covalently bonded to, and replaces one hydrogen atom of one of the carbon atoms to which it is joined, said linker/spacer group being represented by the formula



wherein:

s is an integer of 0 or 1;

t is an integer of 0 to 20 inclusive;

R^1 is H or an electrophilic or nucleophilic moiety which allows for covalent attachment to a biological carrier, or synthetic linker which can be attached to a biological carrier, or precursor thereof; and

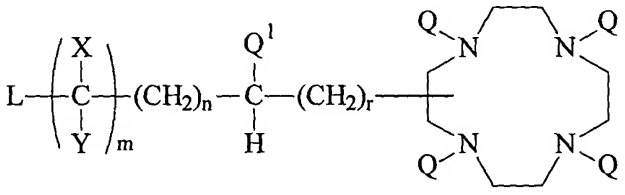
Cyc represents a cyclic aliphatic moiety, aromatic moiety, aliphatic heterocyclic moiety, or aromatic heterocyclic moiety, each of said moieties optionally substituted with one or more groups which do not interfere with binding to a biological carrier;

with the proviso that when R^1 is H, the linkage to the biological carrier is through one of Q or Q^1; and with the proviso that when R^1 is other than H, at least one of Q and Q^1 must be $(CHR^5)_pPO_3R^6R^7$; and with further proviso that when Q is $(CHR^5)_pCO_2R$, Q^1 is $(CHR^5)_wCO_2R$, R

is H, R^5 is H, and R^1 is H, then the sum of m, n, p, r, s, t, and w is greater than 1;

or pharmaceutically acceptable salt thereof.

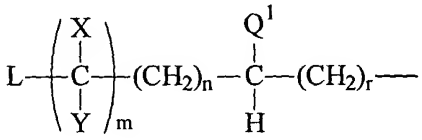
6. The complex according to Claim 1 wherein the functionalized chelant is a compound of formula III



III

wherein:

each Q is independently hydrogen, $(CHR^5)_pCO_2R$ or $(CHR^5)_pPO_3R^6R^7$ or



;

Q^1 is hydrogen, $(CHR^5)_wCO_2R$ or $(CHR^5)_wPO_3R^6R^7$;

each R is independently hydrogen, benzyl or C_1-C_4 alkyl;

R^6 and R^7 are independently H, C_1-C_6 alkyl or (C_1-C_2 alkyl)phenyl;

each R^5 is independently hydrogen; C_1-C_4 alkyl or (C_1-C_2 alkyl)phenyl;

with the proviso that at least two of the sum of Q and Q^1 must be other than hydrogen;

X and Y are each independently hydrogen or may be taken with an adjacent X and Y to form an additional carbon-carbon bond;

n is 0 or 1;

m is an integer from 0 to 10 inclusive;

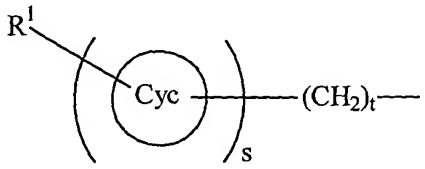
p is 1 or 2;

r is 0 or 1;

w is 0 or 1;

with the proviso that n is only 1 when X and/or Y form an additional carbon-carbon bond, and the sum of r and w is 0 or 1;

L is a linker/spacer group covalently bonded to, and replaces one hydrogen atom of one of the carbon atoms to which it is joined, said linker/spacer group being represented by the formula



wherein:

s is an integer of 0 or 1;

t is an integer of 0 to 20 inclusive;

R^1 is H or an electrophilic or nucleophilic moiety which allows for covalent attachment to a biological carrier, or synthetic linker which can be attached to a biological carrier, or precursor thereof; and

Cyc represents a cyclic aliphatic moiety, aromatic moiety, aliphatic heterocyclic moiety, or aromatic heterocyclic moiety, each of said moieties optionally substituted with one or more groups which do not interfere with binding to a biological carrier;

with the proviso that when R^1 is H, the linkage to the biological carrier is through one of Q or Q^1; and with the proviso that when R^1 is other than H, at least one of Q and Q^1 must be $(CHR^5)_pPO_3R^6R^7$; and with further proviso that when Q is $(CHR^5)_pCO_2R$, Q^1 is $(CHR^5)_wCO_2R$, R

is H, R^5 is H, and R^1 is H, then the sum of m, n, p, r, s, t, and w is greater than 1;

or a pharmaceutically acceptable salt thereof.

7. A conjugate according to Claim 2 comprising the ^{225}Ac complex of DOTA (1,4,7,10-tetraazacyclododecane-1,4,7,10-tetraacetic acid) covalently attached via amide linkage to a biological carrier.

8. A conjugate according to Claim 2 comprising the ^{225}Ac complex of 2-(p-isothiocyanatobenzyl)-1,4,7,10-tetraazacyclododecane-1,4,7,10-tetraacetic acid covalently attached to a biological carrier.

9. A pharmaceutical formulation comprising the ^{225}Ac conjugate of Claim 2 and a pharmaceutically acceptable carrier.

10. The formulation of Claim 9 wherein the pharmaceutically acceptable carrier is a liquid.

11. A method of therapeutic treatment of a mammal having cancer which comprises administering to said mammal a therapeutically effective amount of the formulation of Claim 9.